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(71) Applicant and

(72) Inventor: ESHLEMAN, James, R. [US/US]; 11703
Fallswood Terrace, Lutherville, MD 21093 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): PARKER, Antony, R.
[—/US]; 104 Twin Willow Court, Apt. 3C, Owings Mills,
MD 21117 (US).

(74) Agents: CORLESS, Peter, F. et al.; Edwards & Angell,
LLP, P.O. Box 9169, Boston, MA 02209 (US).

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For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: ANTIGENE LOCKS AND THERAPEUTIC USES THEREOF

(57) Abstract: An oligonucleotide based therapeutic strategy, called anti-gene locks, is described which specifically kills cells based on their genotype. The strategy employs oligonucleotides with arms and a backbone that are complementary to both strands of the gene target. Anti-gene locks bind *in vitro* in a sequence dependent fashion and inhibit DNA synthesis. In bacterial cells containing an episome target, they cause elimination of the extra-chromosomal DNA structure. When the target is present in the bacterial or human genome, they selectively kill the majority of these cells.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/05789

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12Q 1/68; A01N 43/04; C07H 21/04; A61K 31/07
 US CL : 435/6, 325, 375, 91.1; 536/24.5, 24.1; 514/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 435/6, 325, 375, 91.1; 536/24.5, 24.1; 514/44

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ESCUDE et al. Padlock oligonucleotides for duplex DNA based on sequence-specific triple helix formation. Proc. Natl. Acad. Sci. USA. September 1999, Vol. 96, pages 10603-10607, see entire article.	1-33, 41-43, 59-65
A,P	SANDO et al. Imaging of RNA in bacteria with self-ligating quenched probes. Journal of American Chemical Society. April 2002, Vol. 124, pages 9686-9687, see entire article.	1-33, 41-43, 59-65
A	MADRIGAL et al. In vitro antigene therapy targeting HPV-16 E6 and E7 in cervical carcinoma. Gynecol. Oncol. January 1997, Vol. 64, No. 1, pages 18-25, see entire article.	1-33, 41-43, 59-65
A	NILSSON et al. Padlock probes: circularizing oligonucleotides for localized DNA detection. Science. 30 September 1994, Vol. 265, No. 5181, pages 2085-2088, see entire article.	1-33, 41-43, 59-65



Further documents are listed in the continuation of Box C.



See patent family annex.

Special categories of cited documents:	
* "A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

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 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Teresa C. Gibbs

Telephone No. (703) 308-0196

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/05789

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claim Nos.: 66
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
Claim 66 is unsearchable because it contains a sequence identifier where no nucleotide sequence listing in written form or computer readable form (CRF) could be found.
3. ☒ Claim Nos.: 34-40 and 44-58
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

PCT/US03/05789

Continuation of B. FIELDS SEARCHED Item 3:

Medline, Caplus, Embase

search terms: antigene lock, antigene oligonucleotide, padlock probe, HPV, virus